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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/044,799	01/10/2002	Jun Seo	8750-018	8382

7590 11/21/2003

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EXAMINER

LEE, GRANVILL D

ART UNIT

PAPER NUMBER

2825

DATE MAILED: 11/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	10/044,799	SEO ET AL.
Examiner	Art Unit	
Granvill D Lee, Jr	2825	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### **Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

1)  Responsive to communication(s) filed on 12 August 2003.

2a)  This action is **FINAL**.                            2b)  This action is non-final.

3)  Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## **Disposition of Claims**

4)  Claim(s) 1-14 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5)  Claim(s) 1-9 is/are allowed.

6)  Claim(s) 10-14 is/are rejected.

7)  Claim(s) \_\_\_\_\_ is/are objected to.

8)  Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

9)  The specification is objected to by the Examiner.

10)  The drawing(s) filed on \_\_\_\_\_ is/are: a)  accepted or b)  objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)  The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

12)  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)  All b)  Some \* c)  None of:

1.  Certified copies of the priority documents have been received.
2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3.  Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

13)  Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a)  The translation of the foreign language provisional application has been received.

14)  Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

1)  Notice of References Cited (PTO-892) . . . . .  
2)  Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3)  Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.  
4)  Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_.  
5)  Notice of Informal Patent Application (PTO-152)  
6)  Other: \_\_\_\_\_.

**DETAILED ACTION**

***Response to Applicant's Argument***

After review of applicant's amendments and comments, the examiner finds such arguments unpersuasive. Applicant's comments as to Lee et al. and Doan are well taken, however in further review of the prior art, the examiner has found that Abernathey et al. read upon applicant's claimed invention. As these are new grounds for rejection not necessitated by applicant's amended claimed invention, and they are not to be considered final rejections of the claims.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 10-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Abernathey et al. (US Pat. 4,755,478).

In view of these claims, Abernathey et al. teaches a method of manufacturing a semiconductor device comprising forming a gate stack (#100) on a semiconductor substrate (#1) and forming a gate spacer (#60) on

sidewalls of the gate stack wherein the gate spacer includes a top portion substantially lower than the top of the gate stack (Fig. 6).

Further, in view of claim 11, Abernathey et al. includes an interlayer insulating layer (Fig. 4 #90a) over the gate stack and the gate spacer (Fig. 4).

In further view of claim 12, Abernathey et al. teaches that an oxide layer is formed before the interlayer insulating layer, forming a blanket etching stop layer over the entire structure of the gate stack and spacer (Col. 5 lines 15-25).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abernathey et al. (US Pat. 4,755,478) in view of the admitted prior art (Fig. 1-2c).

In view of these claims, Abernathey et al. teaches a method of manufacturing a semiconductor device comprising forming a gate stack on a semiconductor substrate and forming a gate spacer on sidewalls of the gate stack wherein the gate spacer includes a top portion substantially lower than the top of the gate stack. But Abernathey et al. fails to make mention of a self-aligned contact formation. However, the admitted prior art (APA) discusses a plurality of gates

where self-aligned contacts are formed. Namely, APA suggests that contact holes may not be aligned "precisely" (Pg. 1 lines 28-29), and that an alignment method may be needed as shown in figures 2a-2c. And since it is notoriously well known to use a planarized metal contact when making self-aligned contacts, and Abernathey et al. details a metal silicide process over drain/source region (Col. 2 lines 57-66), it therefore would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the prior art with that of Abernathey et al. to develop self aligned contacts in the regions between gates using metal that has been planarized.

***Allowable Subject Matter***

Claims 1-9 are allowed.

***Contact Information***

Any inquiry concerning this communication or earlier communications for the examiner should be directed to Granvill Lee whose telephone number is (703) 306-5865. The examiner can be normally reached on Monday thru Thursday from 7:00 am to 5:30 pm.

If attempts to reach the examiner by telephone are not successful, the examiner's supervisor, Matthew Smith can be reached on (703) 308-1323. The fax phone number for this group is (703) 872-9306.

Any inquiry of a general nature relating to status or otherwise should be directed to the receptionist whose telephone number is 703-308-1782.

Examiner  
Granvill Lee  
Art Unit 2825

G1  
11/11/03



MATTHEW SMITH  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800